

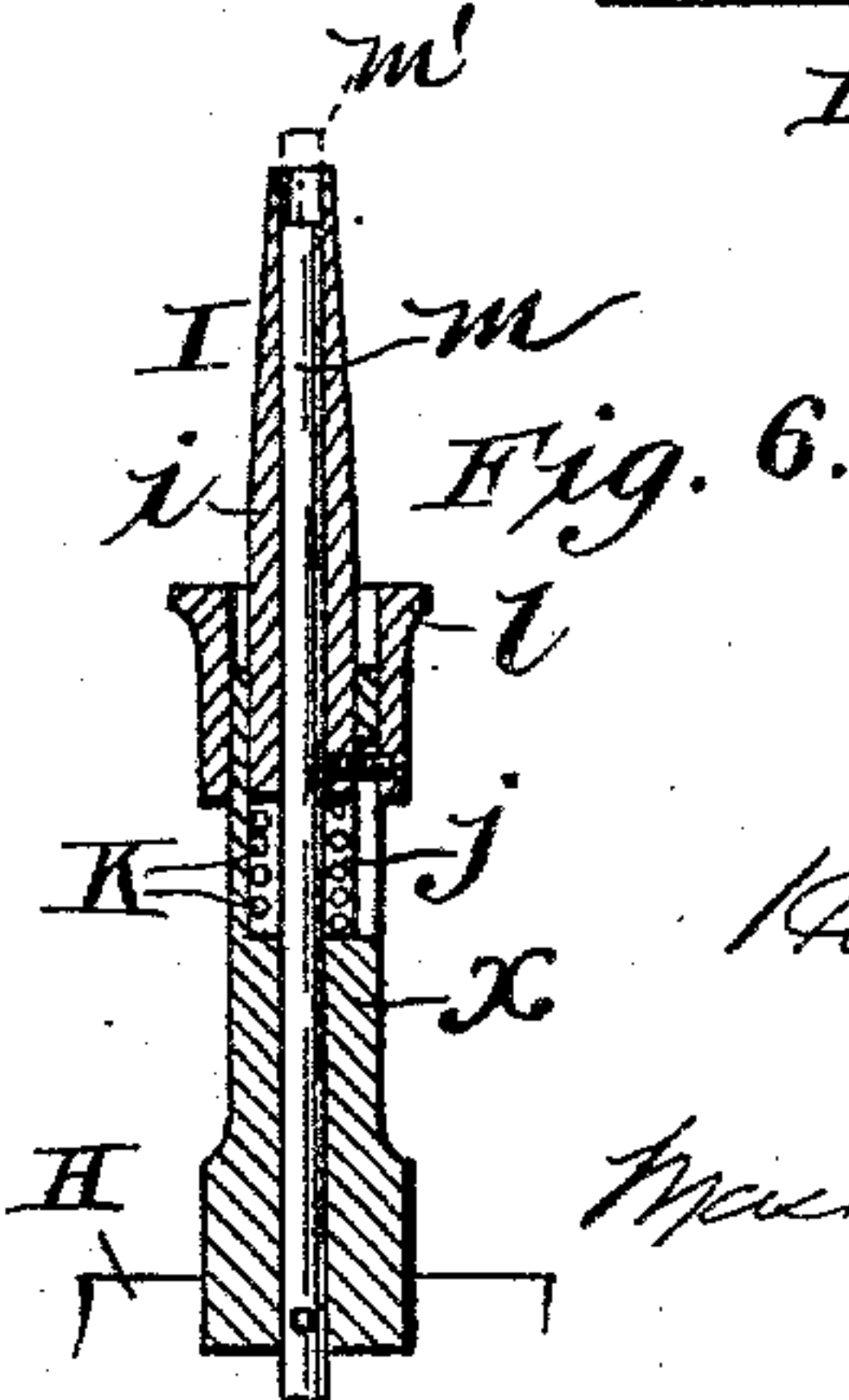
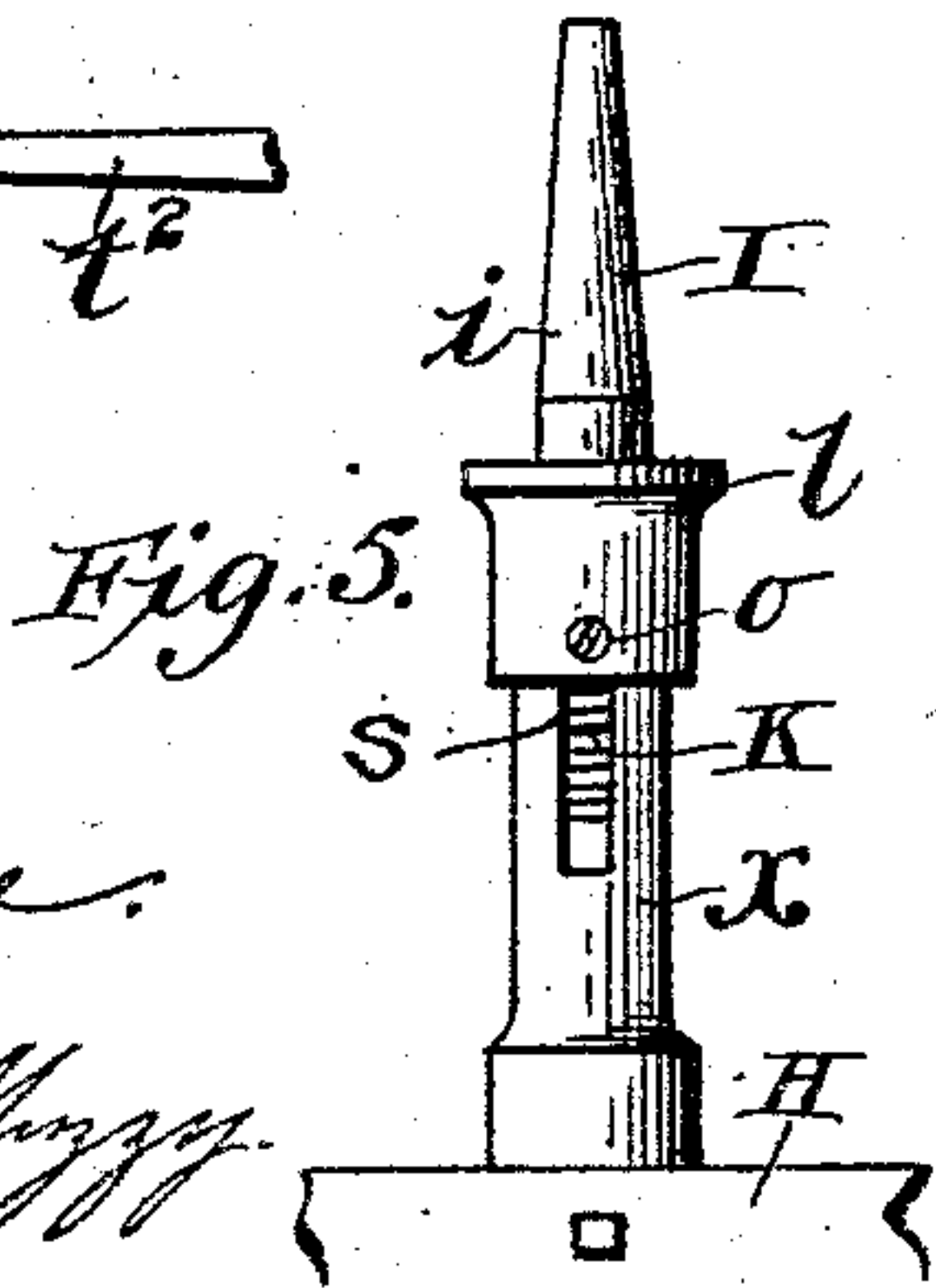
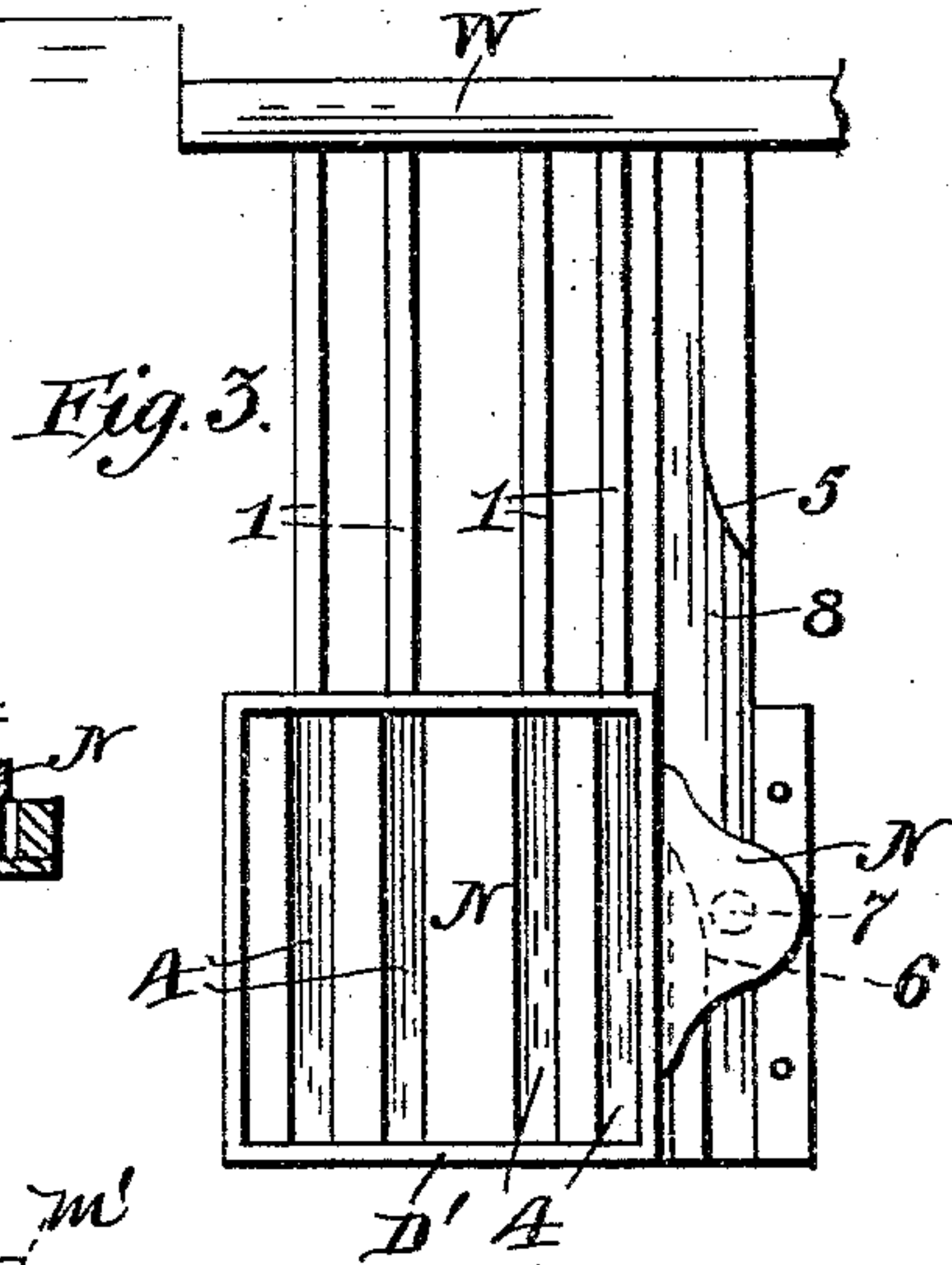
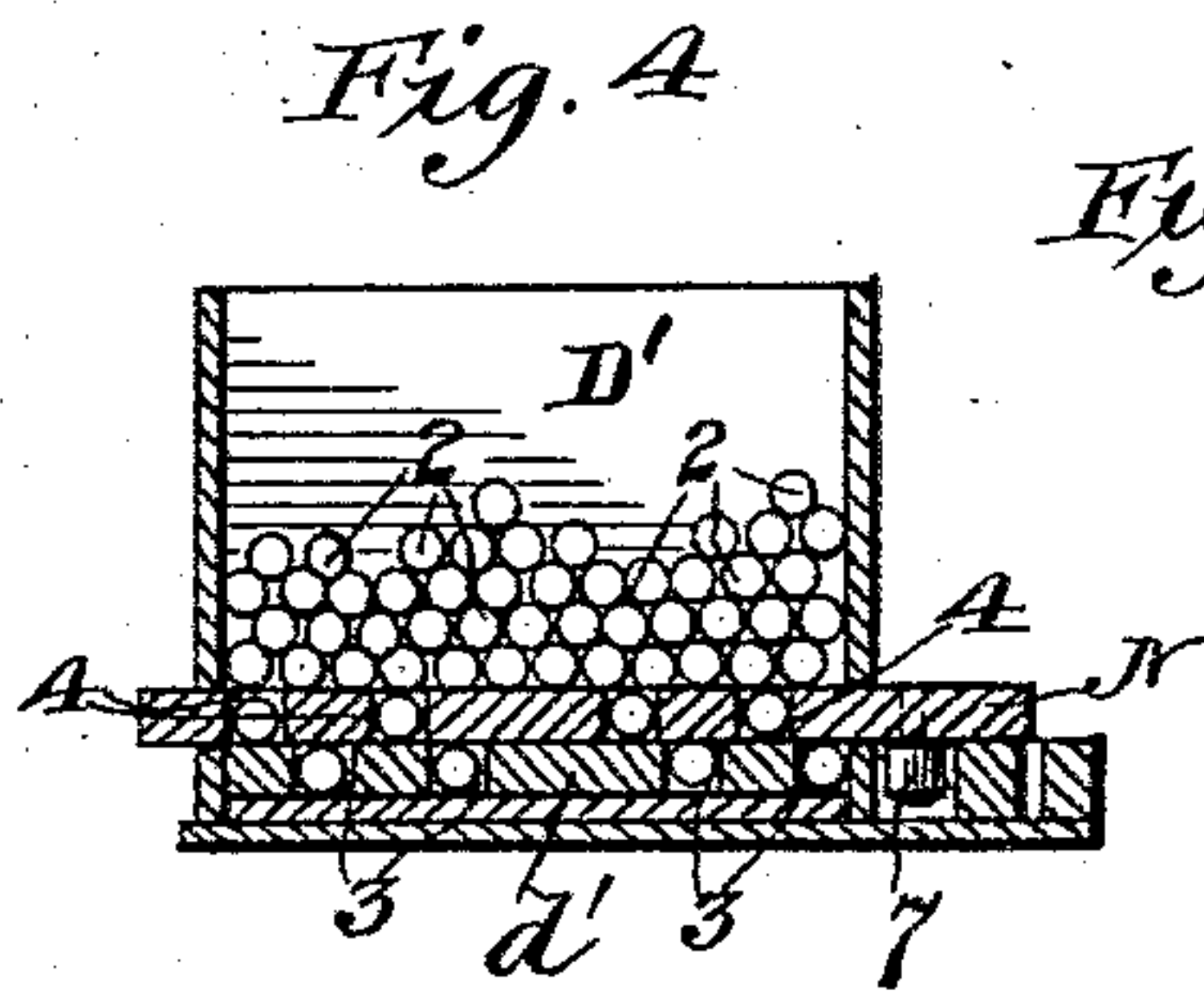
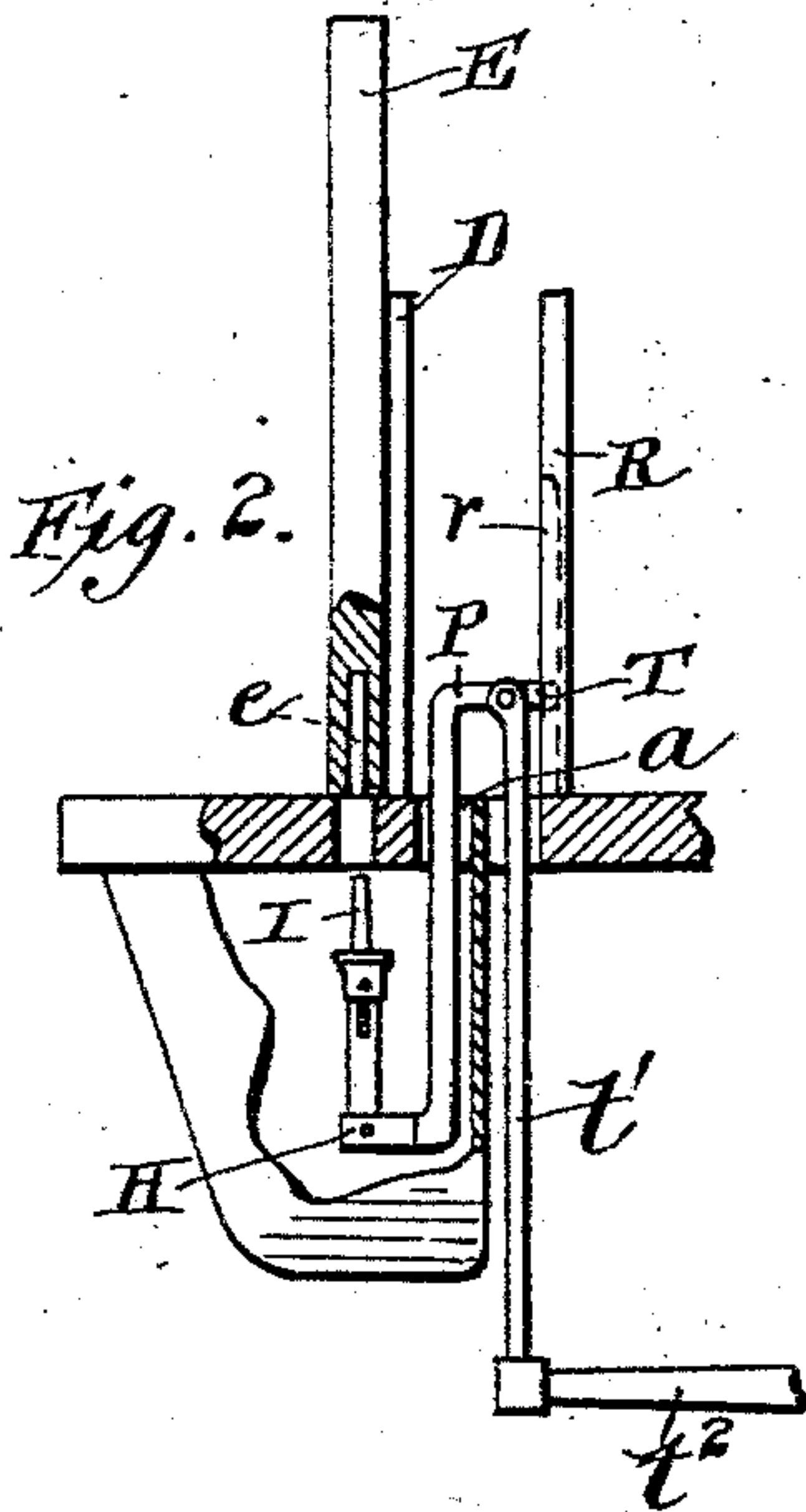
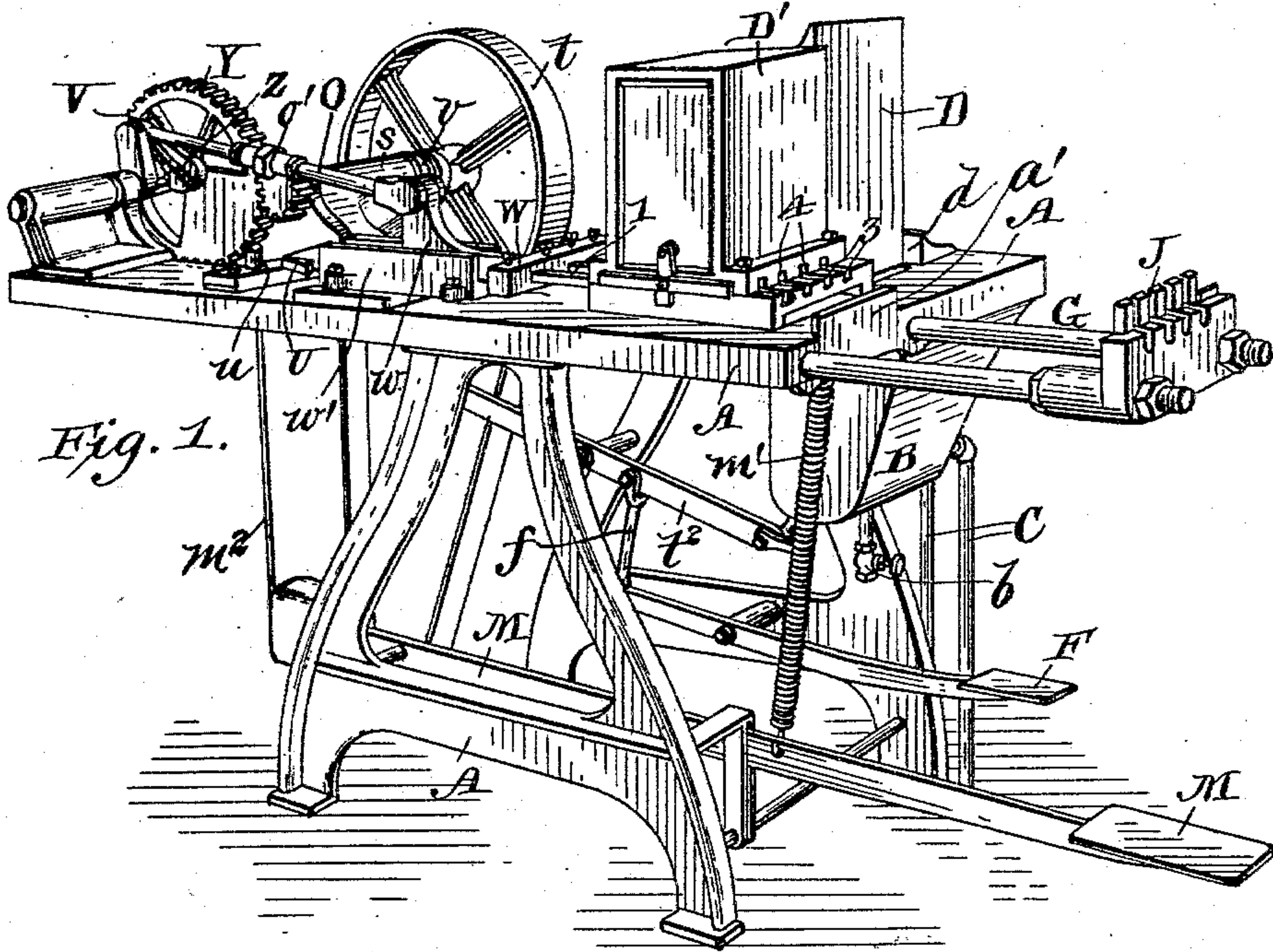
(No Model.)

2 Sheets—Sheet 1.

H. C. DOMAN.
MACHINE FOR SETTING DOWELS.

No. 551,531.

Patented Dec. 17, 1895.



WITNESSES

Everance.
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

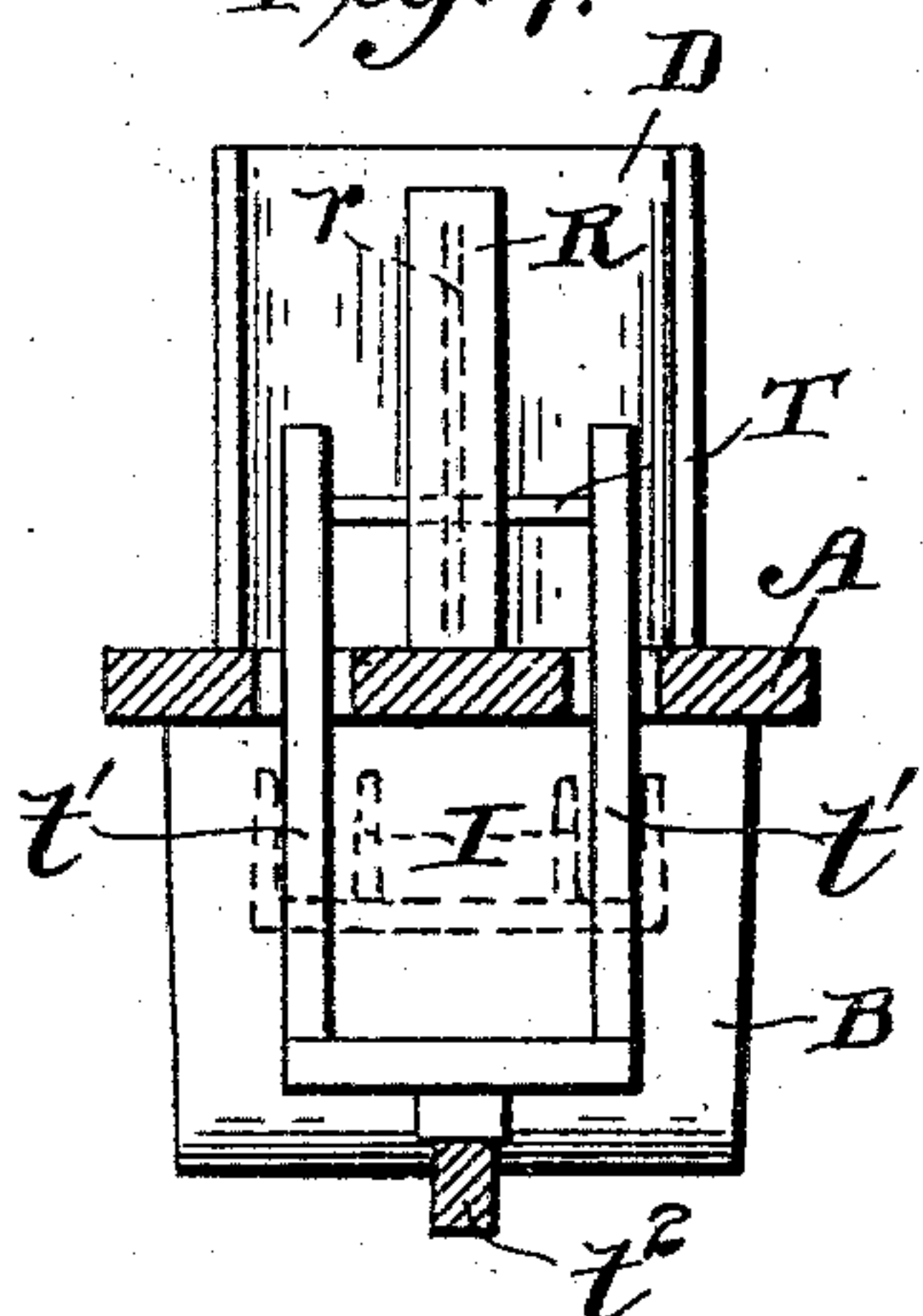


Fig. 8.

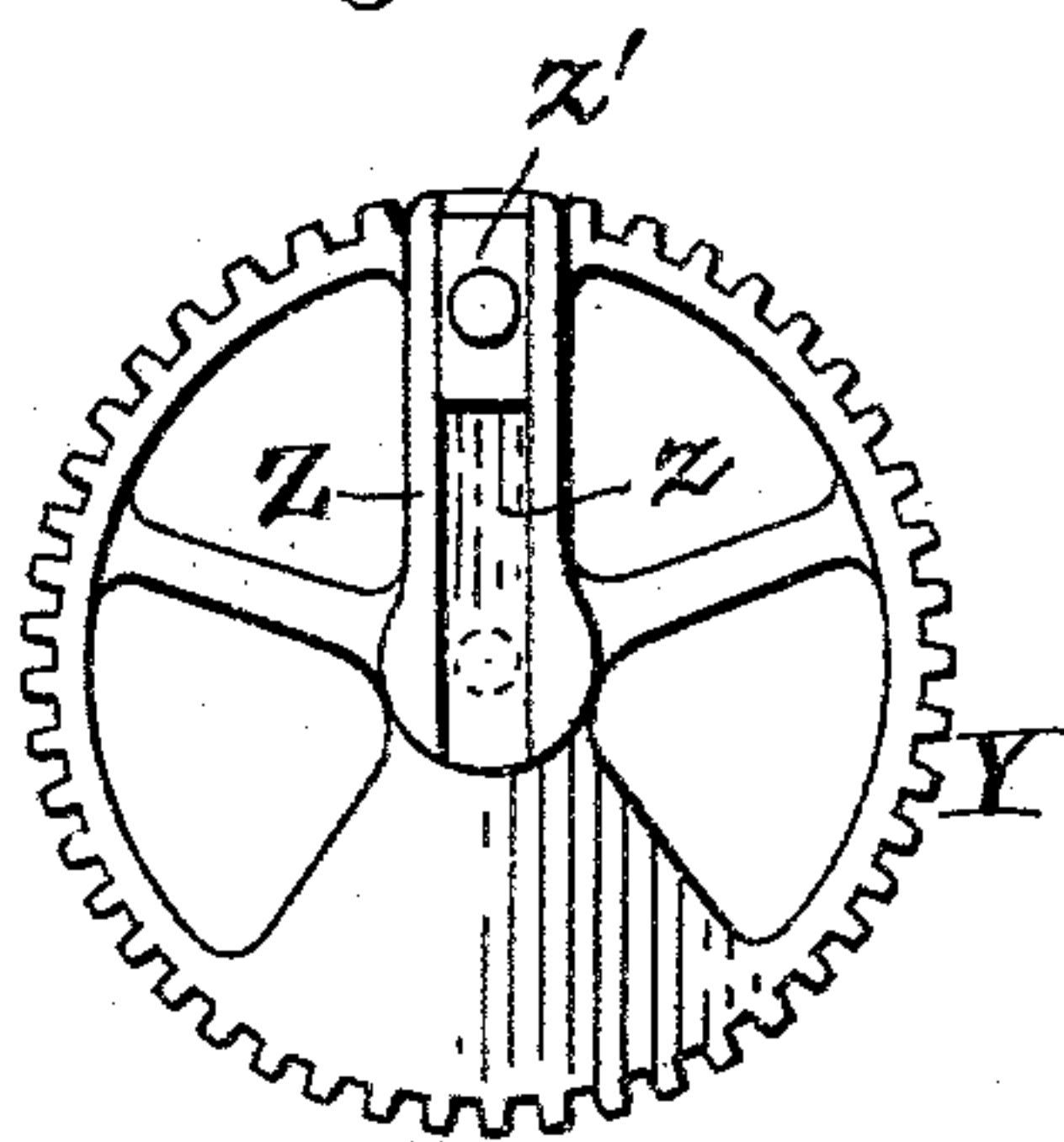


Fig. 9.

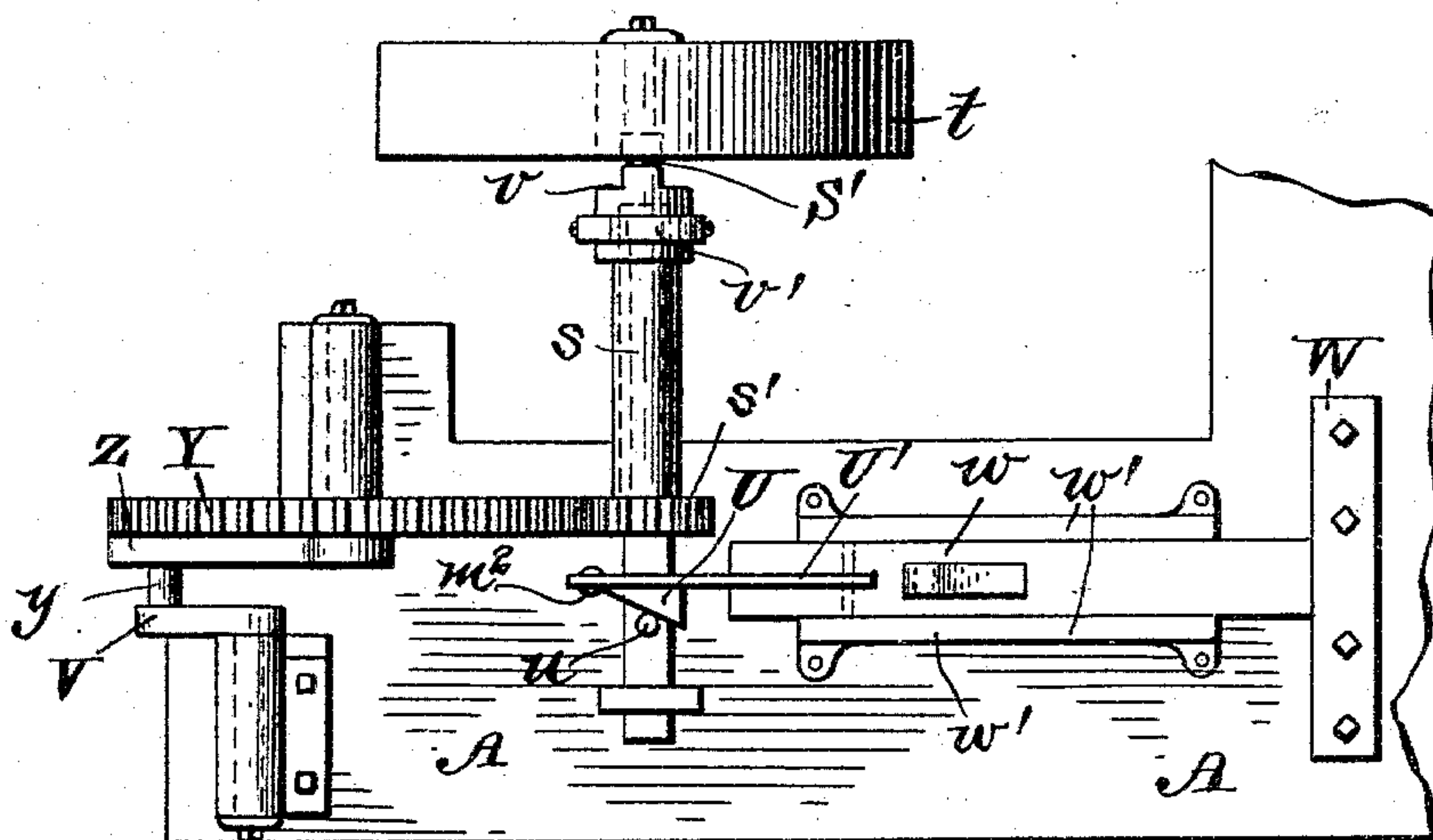
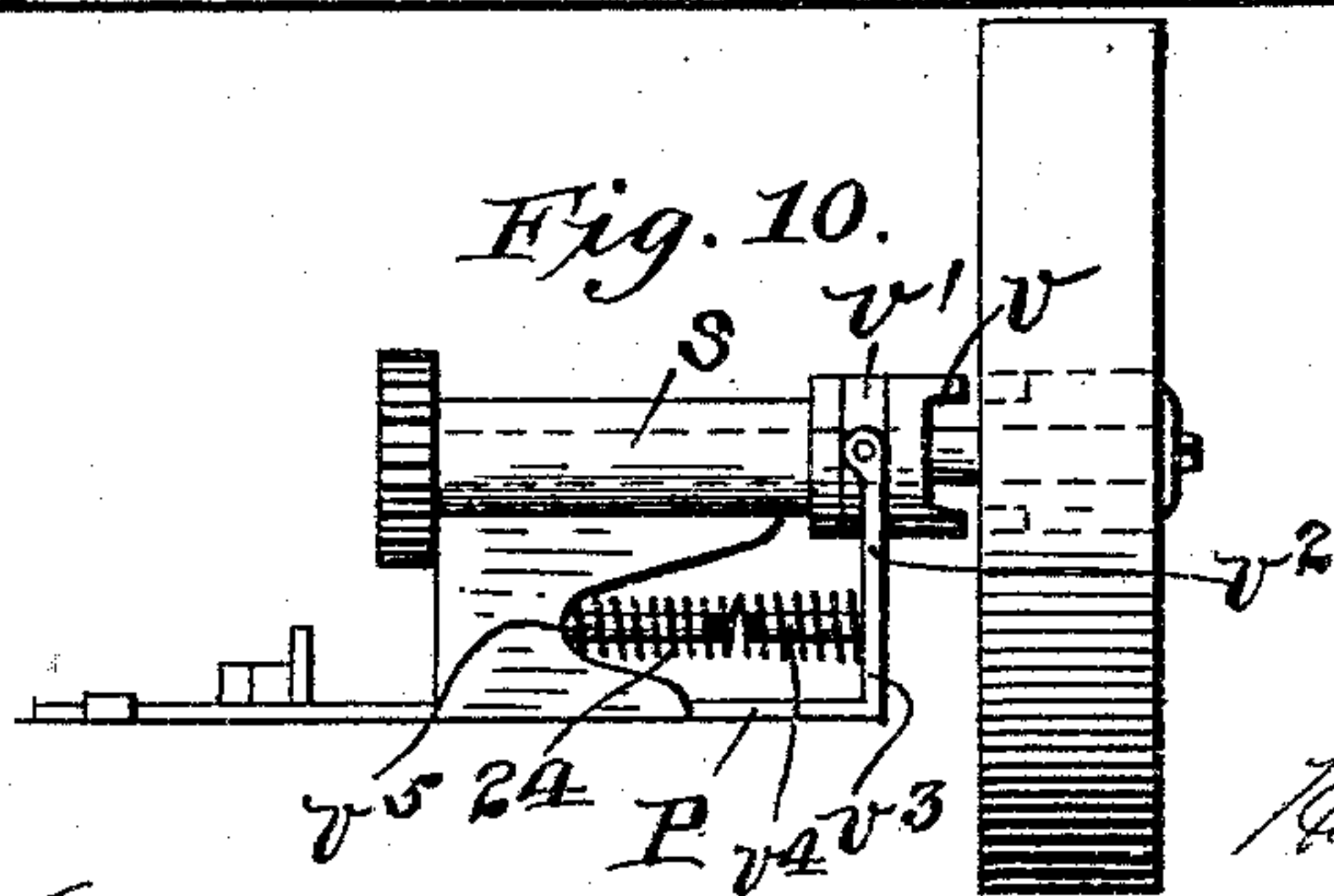


Fig. 10.



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UNITED STATES PATENT OFFICE.

HERMAN C. DOMAN, OF OSHKOSH, WISCONSIN.

MACHINE FOR SETTING DOWELS.

SPECIFICATION forming part of Letters Patent No. 551,531, dated December 17, 1895.

Application filed April 23, 1895. Serial No. 546,908. (No model.)

To all whom it may concern:

Be it known that I, HERMAN C. DOMAN, a citizen of the United States, residing at Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Machines for Setting Dowels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in machines for setting dowels in doors, shutters, and the like.

The invention consists in the combination of a suitable base, dowel-feeding devices, driving-rods for said dowels, means for operating said rods and feeding devices, and glue-injectors adapted to force glue into the dowel-holes.

It also consists in the combination of a suitable base, automatic dowel-feeding devices, and driving-rods adapted to drive dowels with gradually decreasing speed and increasing power toward the end of the stroke.

It also consists of certain other novel constructions, combinations and arrangements of parts, all of which will be hereinafter more particularly set forth and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a perspective view of a machine embodying my invention. Fig. 2 represents a detail side elevation, partly broken away, of the glue tank and injector and connections. Fig. 3 represents a detail top plan view of the dowel supply and feeding mechanism and the dowel-driving rods. Fig. 4 represents a detail central vertical section through said dowel supply and feeding mechanism. Fig. 5 represents a detail side elevation of one of the glue-injectors. Fig. 6 represents a central vertical section of the same. Fig. 7 represents a detail front elevation of the devices shown in Fig. 2. Fig. 8 represents a detail side elevation of the gear and its guide for operating the pitman of the driving-rods. Fig. 9 represents a top plan view of the mechanism for operating the driving-rods and throw-

ing them in and out of gear, and Fig. 10 represents a detail side elevation of the automatic clutch and its connections.

A in the drawings represents the base of the machine; A', the supporting-frame therefor; B, the glue-tank; C, the steam-pipes passing through said tank; D, the rail-support; D', the dowel-supply box, and 1 the dowel-driving rods.

The glue tank or vat, as shown in Figs. 1 and 2, is attached to the under side of the base A so that its open top comes beneath the slot *a* cut in said base. The glue is heated and kept in a liquid state in said vat by means of the steam-pipe C, which passes through the bottom of said vat. The vat is provided with a discharge *b* whereby the liquid glue may be drawn from the vat at any time desired.

The support D is mounted upon the base just over the slot *a* so as to leave a portion of said slot on either side of said support. A stop *d* is also provided at the forward outer corner of the slot for a rail E to rest against while the glue is being injected into the dowel-holes *e* in said rail.

The glue is injected by means of the automatic injectors I, which are illustrated in Figs. 2, 5, 6, and 7. Each injector comprises a rod *m* rigidly secured within a partly-hollowed standard *x*, a movable sleeve *i* mounted upon said rod *m* and within the hollow end *j* of said standard, a spring K mounted in said hollow *j* under said sleeve *i* and an auxiliary sleeve *l* surrounding said standard *x* and connected to said sleeve *i* by means of a screw *o* passing through a vertical slot *s* in said standard. Any desired number of the injectors I are mounted on a supporting-rod H; which rod is provided with two curved arms P which pass upward therefrom and out through the slot *a*, and are connected by a cross-bar T provided with a stud *t* adapted to work in a vertical slot *r* of a standard R which is mounted on the base. The cross-bar T is connected to a pendent bar *t'*, and this in turn is connected to a pivoted lever *t''* which is operated by a pivoted foot-lever F and connecting-link *f*.

It will be seen from the foregoing that when the lever F is depressed the injectors will rise and the sleeves *i* passing through the slot *a* will enter the recesses *e* until the sleeves *l*

strike against the under side of the table when the two sleeves will be arrested, but the standard x and rod m will continue to rise; the latter forcing the glue in the outer end of the sleeve i out into the dowel-hole e . The normal position of the outer end of the rod m is slightly below the outer end of said sleeve i so that a space is left which fills with glue when the injectors descend into the vat after injecting a charge into the rail.

The dowel-feeding devices consist of a dowel-supply box or receptacle D' having a stationary bottom d' provided with longitudinal grooves 3 and a sliding bottom N , also provided with longitudinal grooves 4 and adapted to reciprocate laterally above the bottom d' and through openings cut in the sides of the receptacle D' . The inner end of the bottom N is provided upon its under side with an antifriction wheel or roller 7 which is engaged by the shoulders 5 and 6 of the reciprocating bar 8 and thereby moves said slide N back and forth, the shoulder 5 engaging said wheel 7 and pressing the slide in upon the forward movement of the bar 8 and the shoulder 6, causing the reverse movement of the slide when the bar returns. Said bar 8 is mounted on the head W which also carries dowel-driving rods 1 which are adapted to reciprocate in the grooves 3 and drive the dowels in said grooves into the dowel-holes of the rail which rests upon the support a' and against the stop-block J which is adjustably mounted upon the rods G . The head W is mounted upon a slide w which is adapted to reciprocate in a guide w' mounted upon base A .

The power-shaft S' is loosely mounted in a standard s and is provided with a belt-wheel t , which is loose thereon. A clutch v is keyed to said shaft S' so as to revolve therewith, but be capable of longitudinal movement thereon. This clutch is provided with a loose ring v' , which is connected to a yoke v^2 having a pendant stem v^3 . This stem is connected to a slide P mounted on the base and is provided on its inner side with a finger v^4 adapted to receive one end of a coil-spring 24, the other end of said spring being mounted upon a stem v^5 of the standard s . The office of the spring 24 is to keep the clutch v normally in engagement with the loose wheel t and thus rotate the shaft S' .

The slide P is provided with a stud u adapted to be engaged by a wedge U mounted on a rod U' which is pivoted to the slide w so as to move therewith. This engagement of the wedge U with the stud u occurs every time the slide w moves rearward and causes the slide P to draw the clutch v out of engagement with the wheel t and thus stop the reciprocations of the slide w and dowel-rods actuated thereby.

I provide a pivoted foot-lever M controlled by a spring m' and having a vertical rod m^2 for lifting the pivoted rod carrying the wedge out of engagement with the stud u and thus permitting the spring 24 to force the clutch v

into engagement with the wheel t and again start the reciprocations of the slide w .

The connection with the shaft S' is formed by means of a gear s' mounted on said shaft and a gear Y journaled upon said base A . This gear is provided with a crank-arm Z having a slot z in which a block z' is adapted to slide. A crank-arm V is journaled on said base, but in the rear of the journal of the wheel Y , and this arm is provided at its outer end with a pin y which engages the block z' . A pitman O having a turnbuckle o' has one end pivoted on said pin y and the other pivotally connected to the slide w .

It will be seen from the foregoing that as the wheel Y revolves the pitman O will move forward quickly at first, but as the crank V draws the end of said rod nearer the center of said wheel the speed will decrease, but with a corresponding increase of power. This is a very important feature of my invention as the dowels when driven in this manner do not split the rail as they very often do when driven entirely in at the same speed.

My dowel-feeding device as shown in Fig. 4 is also a very important feature as by it I secure a positive feed of the dowels by the slide N , the dowels first dropping into the grooves 4. Then when the dowels are driven from the grooves 3 the slide is moved over by the shoulder 6 engaging the wheel 7 and the dowels in said grooves 4 drop into said grooves 3 and the operation is repeated.

By my peculiar form of injectors the devices are prevented from becoming smeared with hardened glue as in the old machines in which the glue-covered surfaces were exposed to the cold air, thus causing the glue to harden.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dowel setting machine, the combination of a suitable base, dowel feeding devices, driving rods for said dowels, means for operating said rods and feeding devices, hollow glue injectors adapted to be forced into the dowel holes and movable rods in said injectors for forcing their contents into the dowel holes, substantially as described.

2. In a dowel setting machine, the combination of a suitable base, dowel feeding devices, driving rods for said dowels, means for operating said rods and feeding devices, a glue tank and hollow glue injectors comprising vertically reciprocating sleeves having injecting rods mounted therein for forcing the glue into the dowel holes, substantially as described.

3. In a dowel setting machine, the combination of a base provided with means for holding a door, a dowel supply receptacle having a bottom provided with spaced grooves adapted to hold the dowels to be driven at definite distances apart, a reciprocating feed slide above the grooves in the bottom of said receptacle and protecting the same and provided with slots each capable of accommo-

dating one dowel pin and feeding it to its respective groove in the bottom of the receptacle when said slide is operated, and driving rods fitting into said grooves for driving said
5 dowels from the grooves into the dowel holes in a door, substantially as described.

4. In a dowel setting machine, the combination of a suitable base, dowel feeding devices, a slide having a head carrying dowel
10 driving rods, a power shaft, means connecting said slide to the power shaft, a belt wheel on said shaft, a slide carrying a clutch connecting said wheel and shaft and a projection
15 on the dowel rod slide for operating said slide carrying the clutch for automatically stopping the machine after each reciprocation of the driving rods, substantially as described.

5. In a dowel setting machine, the combination of a base provided with means for holding a door, a dowel receptacle having a bottom provided with grooves at determined intervals apart, a slide mounted above the bottom of said receptacle and provided with slots each capable of accommodating one dowel pin
25 and feeding it to its respective groove in the bottom, an anti-friction wheel on said slide, a slide having a head carrying driving rods and a slide actuating rod provided with shoulders having bevel faces for operating the feed-
30 ing slide by engaging the friction wheel thereon, and means for operating the headed slide, substantially as described.

6. In a dowel setting machine, the combination of a suitable base, automatic dowel
35 feeding devices mounted on the same, and a slide carrying driving rod adapted to drive the dowels, an operating shaft, a gear having a slotted crank arm operated by said shaft, a pitman connecting said crank arm and slide
40 and means for moving the end of said pitman in said slotted crank during the revolution, and means for automatically stopping the driving rods at the end of each stroke, and hollow glue containing injectors for injecting
45 glue into the dowel holes, substantially as described.

7. In a dowel setting machine, the combination of a suitable base, dowel feeding de-

vices mounted on the same, driving rods for said dowels, means for automatically stopping
50 said rods after each stroke, a glue tank, hollow glue containing injectors in said tank, means for elevating the injectors out of said tank and movable rods in said injectors for
55 injecting their contents into the dowel holes in the rail, substantially as described.

8. In a dowel setting machine, the combination of a suitable base, a glue tank below a slot in said base, hollow glue containing injectors in said tank and adapted to be raised
60 through said slot and rods in said injectors for injecting glue therefrom into the dowel holes, a rail support above said slot, dowel feeding devices, driving rods for said dowels, an adjustable rail stop, and means for oper-
65 ating the driving rods and the dowel feeding devices, substantially as described.

9. In a dowel setting machine, the combination of a suitable base, dowel feeding devices, dowel driving rods, means for operat-
70 ing the same, and glue injectors comprising a hollow standard, a spring pressed sleeve mounted in the same, an auxiliary sleeve mounted upon the same and connected to the before mentioned sleeve, and an ejecting rod
75 in said first mentioned sleeve, substantially as described.

10. In a dowel setting machine, the combination of a suitable base, dowel feeding devices, hollow glue containing injectors, a slide
80 having a head carrying dowel driving rods, a gear wheel having a slotted crank arm and connected to the power shaft, a crank mounted on a shaft journaled to the rear of the journal of said gear wheel and having a pintle en-
85 gaging the slot in the crank arm of said wheel, and a pitman connecting the said pintle to the slide carrying the driving rods, substantially as described.

In testimony whereof I affix my signature
90 in presence of two witnesses.

HERMAN C. DOMAN.

Witnesses:

HENRY HENKEL,

CHARLES J. SCHMITT.